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AUTHOR Allen, Thomas E.
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ABSTRACT

Continuing motivation has been defined as an individual's willingness to return to a task or task area at a subsequent time, in similar or varying circumstances, without visible external pressure to do so, and when other behavior alternatives are available. In the current study, path models from Weiner's theory of motivation were developed to explore the attributional antecedents of continuing motivation. Model variables included locus of control, prior and subsequent ratings of task value and expectations for success, subjective judgments of outcome, internal attributions of the cause of success or failure, and continuing motivation. Questionnaires measuring these variables were administered to 168 fifth and sixth graders before and after a unit in science which formed part of their regular curriculum. Separate path analyses were planned for successful and failing students. For successful students, results confirmed many of the predicted path relationships pertaining to value, expectation, locus of control, and continuing motivation, although the mediational effects of attributions were very weak. Too few students reported failing the unit to warrant a full path analysis for that group; however, examination of correlations of data obtained from the failing students suggested that, for them, attributions play an important role in the facilitation of continuing motivation. (Author/RH)

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Exploring the attributional determinants of continuing motivation

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Thomas E. Allen

Gallaudet College

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Paper presented at the annual meeting of the American Psychological Association, Washington, D.C., 1982.

Abstract

Path models derived from Weiner's theory of motivation were developed to explore the attributional antecedents of continuing motivation (CM). Model variables included: locus of control, prior and subsequent ratings of task value and expectations for success, subjective judgements of outcome, attributions, and CM. Questionnaires which measured these variables were administered to 168 fifth and sixth graders before and after a unit in science which formed part of their regular curriculum. Separate path analyses were planned for the success and failing students. Results indicated, for successful students, that many of the predicted path relationships pertaining to value, expectation, locus of control, and CM were confirmed, but that the mediational effects of attributions were very weak. Too few students reported failing the unit to warrant a full path analysis for that group; however, examination of the correlations suggested that, for failures, attributions seemed more important in the facilitation of CM.

Exploring the attributional determinants of continuing motivation

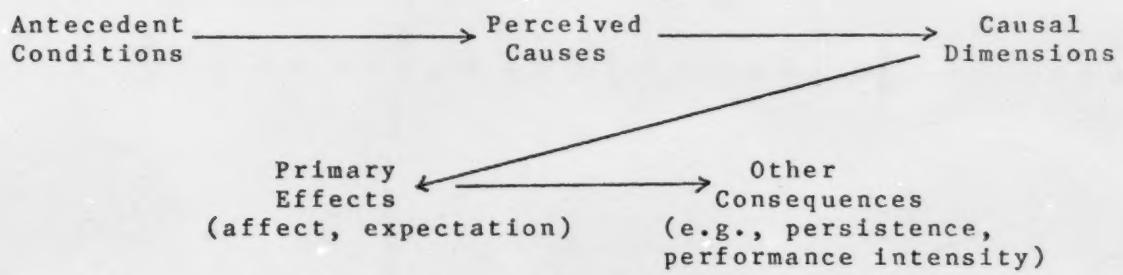
The willingness of students to pursue educational tasks beyond the instructional contexts in which the tasks are introduced is an important concern for education. Yet most of the research into student motivation and achievement related behavior utilizes classroom performance (success and failure) as the primary variable in its analyses. A focus on achievement reflects only part of the role of schooling; activities which children learn to pursue within given instructional contexts are important ones for them to pursue in circumstances which vary from their original presentation. In an ever increasingly specialized and complex society such as ours, it is important that education be an ongoing process, not restricted to the context of the classroom alone.

Maehr (1976) has called this willingness to return to tasks Continuing Motivation (CM), which he defines operationally with four components. These include a return to a task or task area: 1) at a subsequent time, 2) in similar or varying circumstances, 3) without visible external pressure to do so, 4) when other behavior alternatives are available. Given this definition, it is possible, and indeed important, to study the aspects of schooling which give rise to the facilitation of CM.

The current study seeks to explore the attributional antecedents of CM. It is assumed that units of instruction in the classroom are achievement situations; i.e., students experience success or failure. However, it is obvious that the perceived outcome of an achievement situation cannot predict whether a student will exhibit CM. There are, among students who succeed and among students who fail, those who

will and those who will not be motivated to continue to pursue classroom tasks outside of the classroom achievement-oriented situation. It is possible that the attributions that children make to their successes and failures in school mediate their perception of success and failure and their willingness to pursue tasks. This possibility is explored in the current study.

Weiner (1974,1979) has proposed a theory of motivation in which the attributions that people make regarding the perceived causes of their successes and failures mediate their achievement experience and their subsequent achievement-related activity. In general, Weiner (1979) has proposed the following model:



Weiner's theory has inspired a great deal of research in recent years which has explored many of the relationships implied by his model. While many of these studies have provided insight and substantiation for many of the components of the theory, few have studied directly the mediational role of attributions in real achievement contexts, and few have assessed the strength of the causal links among the proposed constructs in the model.

The current research was undertaken with two major purposes in mind. The first was to consider CM as one of Weiner's "Other Consequences". While the Weiner theory predicts that internal ascriptions for success and failure will lead to affective responses of pride and shame, respectively, and that these responses will lead to persistence within similar achievement contexts, it remains to be shown whether these effects will carry over to contexts where the reinforcement contingencies are no longer imposed in the classroom setting. In one study of CM, Salilli, Meahr, Sorensen, and Fyans (1976) found that experimental subjects who judged their performance on an achievement task to be attributed to internal causes tended to exhibit more CM. The current study hopes to explore the extent of that relationship in more depth.

The second major purpose is to seek validation for some of Weiner's claims 1) through collecting data in a naturalistic achievement setting in which students are asked to judge their own levels of success and to formulate causal attributions relative to those outcome judgements, and 2) through the use of a path analytic methodology in which the causal strength of the paths implied by the model can be more accurately evaluated. The Weiner model, as represented above, implies that the antecedent conditions affect motivated activity only through their effect on the mediating attributional variables; i.e., their effect is indirect. The current analysis will attempt to show the strength of the direct effects of the antecedent variables, thus illuminating more clearly the strength of the mediational role of attributions.

Further specification of Weiner's variables

Antecedent Conditions. Students enter achievement situations with a wide range of expectations, abilities, attributional predispostions, and affect. The current analysis will focus on three such conditions: locus of control (considered as a predispositional variable), expectations for success in an upcoming achievement task, and the rated value of the upcoming task to the individual.

These variables were selected because of their importance to the Weiner theory. Locus as an attributional dimension should relate to an affective response to success and failure. This affective response may, in turn, be important in the prediction of CM. It is important to clarify, in terms of the model, the extent to which these affective responses relate to general predispositions to attribute successful and unsuccessful achievement experiences to internal or external sources, or to attributions to specific outcomes. To address this issue, a general predispositional locus measure will be included in the proposed model.

Expectations for success and ratings of task value are taken directly from the social learning theory of Rotter (1954) which guided the early development of the attributional theory of motivation. According to Rotter, the potential for a given behavior in a given situation is a function both of the expectation that a reinforcement (success) will occur in that situation and the value of that reinforcement to the individual. At the beginning of any achievement task, it is assumed that individuals have specific expectations for success and have specific judgements related to the value of that

success.

Causal Dimensions. In Weiner's recent work, he has identified three primary attributional dimensions: locus, stability, and controlability. The current study will consider only the locus dimension because of its theoretical importance to the mediation of affective responses to success and failure situations. As a construct in the current model locus will be defined as the extent to which individuals attribute their performance on a school task to internal causes (ability and effort) as opposed to external causes (task difficulty and luck).

Individual perceived causes will not be considered separately. As has been noted in other research (e.g., Elig & Frieze,1979; Forsythe & McMillan, 1981), there are unresolved assessment problems related to the interpretation of unitary causes. In the current study students will be asked to attribute the causes of their performances to effort, ability, luck, and task difficulty, employing a methodology used successfully by McMahan (1973). The data will be collapsed to reflect a clear and unambiguous differentiation along the internal-external dimension.

Primary effects. Subsequent expectations and subsequent ratings of task value will be defined as primary effects in the current analysis. Thus the model will test the mediational strength of the internality of attributions between expectations and judgements of value both prior and subsequent to an achievement event.

Other consequences. As mentioned above, CM is the motivational activity that is of main concern in the current analysis. It should be reemphasized that there are no compelling theoretical or empirical reasons why continuing motivation should ensue given the attributional sequence of events described in Weiner's model. The contingencies of reinforcement are very different in situations where students are able to decide for themselves what activities they wish to pursue. Thus the major tenet of social learning theory, i.e., that the reinforcements about which expectancies and judgements of value are made are situation specific, is not completely satisfied in a CM paradigm.

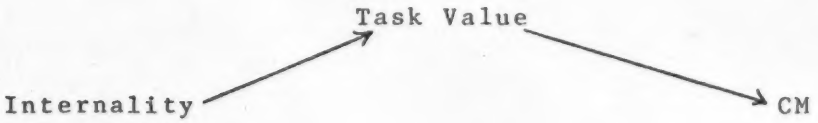
However, it is not unreasonable to hypothesize that the model should generalize to CM situations. Persons who value achievement tasks highly and who attribute their performance to internal sources will likely derive much of the reinforcement value of their performance from the tasks themselves and not from the rewards dispensed through classroom means such as grades. That is, they will view the achievement task as having endogenous reinforcement, as opposed to exogenous reinforcement (Kruglanski, 1975). To the extent the task activities are reinforcing in and of themselves, the social learning formulation may be appropriate after all.

Specification of the Model

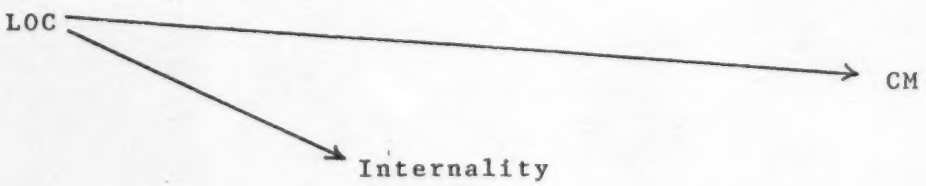
The use of path analysis to confirm the plausability of theoretical models requires the a priori specification of predicted path relationships. The anticipated direct, indirect, and spurious effects

must be delineated. For example, if a positive correlation between the internality of attributions and CM is anticipated, our proposed model must specify the degree to which that correlation can be broken down into direct effects, indirect effects, and spurious effects. That is, decisions based on theory must be made about the degree to which we believe internality affects CM directly, i.e.,

indirectly (e.g., through an increased rating of task value) -



or spuriously (e.g., the correlation can be accounted for by the fact that both internal attributors and persons who exhibit CM have a predispositional tendency to attribute their acievement performance to internal sources) -



less, two tentative models will be proposed.

Insert Figure 1 here

Figure 1 shows a possible model for students who succeed at an achievement task. In this model, CM is only directly affected by ratings of task value. To be sure, internality is correlated with CM, but its effects are presumed to be indirect (through the mediational effects of the subsequent rating of task value) and spurious (through the liklihood that both internality and CM are both related to a high prior rating of task value).

Subsequent expectations do not, in the model proposed, have a direct effect on CM. This is a reasonable assumption since expectations relate directly to the reinforcement contingencies of the achievement situation and not to situations where those contingencies are removed. We may expect significant correlation between subsequent expectation and CM, but, again, the model proposes a spurious effect: people who have high subsequent expectations are likely to judge tasks of this kind, in general, to be valuable. Thus, prior value may account for the correlation between subsequent expectations and CM.

Finally, people who have a predisposition to attribute their successes internally (LOC-S) should attribute a specific successful outcome internally. Also, since they should typically take pride in their successes and feel shame in their failures, it is also reasonable to suppose that they will rate upcoming achievement tasks to be

of high value to them as individuals. Thus the model proposes direct effects of LOC-S on the internality of attributions to a specific outcome and to the prior rating of task value. LOC-S should show indirect effects on Subsequent Expectations, Subsequent Value, and CM, as indicated in Figure 1.

Insert Figure 2 here

Figure 2 shows a possible model for failing students. Here, the situation is much more complex and the proposed model is highly tentative. CM is still predominantly related to judgements of task value, and persons should rate subsequent tasks as being highly valuable to the extent that they attribute their failure on a preceding task to internal sources. There should be a strong relationship between prior value and CM since failing a highly valued task should lead to a strong desire to devote time outside of the classroom situation to the task in order to make up for the failure.

The relationship between prior value and the internality of attributions is somewhat difficult to predict. On the one hand, people who typically attribute failure experiences internally (LOC-F) may, like people who typically attribute successful experiences internally, rate most achievement tasks high in value due to a higher ego involvement in their achievement experiences. Thus we might expect prior value to be positively related to the internal attribution of a specific failure experience due to a spurious relationship with the

predispositional LOC tendency to judge causes of failure to internal sources. On the other hand, much research evidence has been presented which shows an ego-defensive reaction to failure; i.e., people tend to attribute failure to external sources (e.g., Arkin & Maruyama,1979; Bernstein, Stephen & Davis,1979). This is especially likely for tasks that have initially been judged to be high in value. Thus Figure 2 posits positive effects between LOC-F and both prior value and the internality of attributions, but it also predicts a negative relationship between prior value and the internality of attributions.

The effects of prior value on subsequent expectation (following a failure) and of prior expectations on subsequent value are equally difficult to predict. There is no reason to assume that failing a highly valued task will lead to high subsequent expectations. When people fail a highly valued task, they are likely to reevaluate their abilities and their efforts, and it is difficult to predict what effect this will have on subsequent expectations. The situation is more complicated if these people have made an ego-defensive attributional response.

When people fail a task on which they expected to do well, their egos will likely be put on warning. Even if they do attribute their performance to unstable causes commensurate with the disconfirmation of their expectancies (Weiner, 1979), it is also likely that they will rate subsequent tasks highly valuable since they will seek to attain future success in order to reconfirm their original expectations. The current model will thus predict that prior expectations will have a positive effect on subsequent value for failing students.

Method

Sample

One hundred and sixty eight fifth and sixth grade students from six different classes in a suburban elementary school in the Midwest participated in the current study. Since the design of the study called for the monitoring of these students for a three week period of time, there was some attrition and some incomplete sets of data at the conclusion of the data collection period. Complete data were obtained for 133 students; these constitute the sample used in the analysis.

Data collection strategy

The data for the current study was collected over a three week period which encompassed a single instructional unit in science. The unit included some lecture, discussion, in-class experiments, and a final quiz. At the beginning of the unit, students were administered a questionnaire on which they were asked to judge their expectations for success in the upcoming unit and to rate the value of the upcoming unit to them as individuals. Also the pre-unit questionnaire included the Locus of Control instrument. A post-unit questionnaire was administered at the completion of the unit of instruction. This questionnaire asked students to state whether they felt they had succeeded or failed the unit, to attribute their performance to various causal elements, to state their expectations for success in the subsequent unit in science, to judge the value of the subsequent unit, and to respond to a series of CM questions designed to assess their level of

CM. All of the measures are described more fully below.

Measures used

Success/failure designation. Following the instructional unit students were asked whether they felt they had succeeded or had not succeeded on the unit. The responses to this question yielded 110 students who indicated they had succeeded, and 23 students who indicated they had failed.

Locus of Control (predispositional variable). Prior to the unit of instruction, students were administered the Intellectual Achievement Responsibility Scale (IAR) developed for this age group by Crandall, Katkovsky, and Crandall (1964). The IAR yields two different scores: one which represents the degree to which children typically attribute their successes internally (LOC-S), and one which represents the degree to which they attribute their failures internally (LOC-F). Thus it was possible to include in the path analysis of the model for succeeding students the LOC-S measure, and, in the analysis of the model for failing students, the LOC-F measure.

Value and Expectations. Both before and after the unit of instruction students were administered a questionnaire which included questions related to the students' perceived value of the upcoming unit in science and their expectations for success. The questions on the pre-unit questionnaire referred to the unit of science studied in the currnt analysis; the questions on the post-unit questionnaire

referred to a subsequent unit. The post-unit questionnaire was administered immediately after the results of the quiz results were announced to the students so as to maximize the motivational effect of the feedback. The value and expectations questions were five-point Likert scales.

Internal Attribution measures. The procedure for determining the respondents' attributions was adopted from a similar study by McMahan (1973). Students who reported succeeding were directed to one set of questions; students who reported failing were directed to another. Students were given pairs of each of the four attributional elements (effort, ability, luck and task difficulty), and asked to determine which, of the pair, was more responsible for their success or failure. Each attributional element was compared with the remaining three and scored as to the number of times it was rated as being more important than another of the attributional elements. Each of the four attributional elements had a score assigned from 0 to 3. The internality measure was formed by subtracting the sum of the task difficulty and luck attributional scores from the sum of the effort and ability attributional scores. The resulting internality scale ranged from -5 to +5, with a +5 representing the most internal response and -5 representing the most external.

CM. To assess CM, a scaling technique employed by Maehr and Stallings (1972) was adopted. The scale consisted of a series of questions; each required a yes, no, or uncertain response. The

questions were ordered with regards to the level of CM necessary for a yes response. While the first question only asked students to indicate whether they would, at any time in the future, be willing to return to the activities of the previous unit, the final question required students to specify a time, outside of school, when they would be willing to return to this activity and then sign their names to the questionnaire to strengthen their commitment. At each level the students were instructed to skip the remaining CM questions if they had responded no or uncertain to the previous question. The result of this technique was a score from 1 to 6 which indicated how committed a student was to returning to the task on his\her own time.

Design

The current study utilized a within subjects correlational design, with separate analyses planned for the success and failing students. The path coefficients were estimated using multiple regression (Blalock,1964). The models presented in Figures 1 and 2 were analyzed as recursive models, i.e., each variable was regressed on all of the variables which occerred temporally earlier in the model. Since value and expectation at each point in time could not be temporally ordered, no path relationships between value and expectation at each time were assumed. It was assumed that the correlations between value and expectations could be explained as lagged effects; i.e., that value at time 1 affected expectations at time 2 and, conversely, that expectations at time 1 affected value at time 2. Weights which did not differ significantly from 0 were dropped and the regressions run a second

time.

Because many variables not included in the models may affect the relationships implied by the model, an attempt was made to remove some of these effects prior to testing the models. The path regressions were run on a matrix of partial correlations. Effects due to actual performance on the unit quiz, sex, and class membership were partialled out.

Results

Insert Table 1 here

Success students

The matrix of partial correlations for successful students appears in Table 1. With class membership, sex, and quiz performance partialled out, LOC-S shows significant correlations with expectations for success and with ratings of value both prior and subsequent to the unit of instruction monitored in the current study. Likewise, LOC-S correlates significantly with CM. The correlation between LOC-S and the internality of attributions to the specific outcome is not significant.

Prior value, prior expectations, subsequent value and subsequent expectations show relatively strong intercorrelations. Prior value and prior expectations show no significant correlation with the in-

ternality of attributions; however, subsequent ratings of value and expectations show small, but significant correlations with the internallity of attributions. All of the value and expectations variables have significant correlations with CM; however, the value variables tend to be more correlated with CM, and both value and expectations are more highly correlated with CM subsequent to the unit of instruction, compared with the ratings of value and expectation made prior to the unit.

Internality of attributions shows weak correlations throughout the matrix. Its weak but significant correlations with subsequent value and expectations have been noted. Similarly, it shows a weak but significant correlation with CM.

Insert Figure 3 here

The results of the path analysis for the successful students appear in Figure 1. In the model, only prior and subsequent value, as predicted, show significant direct effects on CM. Subsequent value is directly affected by prior value and by LOC-S and not by the internality of attributions nor by prior expectations. However, prior value, prior expectations and internality of expectations directly effect subsequent expectations. LOC-S has direct effects on both prior value and prior expectations.

Discussion of Model for Successes. The path relationships predicted for success students are, to a large extent, confirmed by the current analysis, except that the degree to which succeeding students attributed their performance to internal sources had very little mediating influence in the facillitation of CM. Internality of attributions showed a small, but significant correlation with CM; however, the path analysis only hints at how that correlation breaks down into the separate kinds of effects. With the small, but significant, path coefficient connecting internality of attributions with subsequent expectations, there is some support for the folllowing causal explanation: Successful students who attribute their performance to internal sources have high expectations for future success. Rating the just completed task to be high in value is also important in the facillitation of high subsequent expectations. Thus, the noted correlation between the internality of attributions and CM is due to a spurious effect, via its direct effect on subsequent expectations. Note that subsequent expectations does not directly effect CM, in spite of the significant correlation shown between the two variables. This correlation can be explained by the intercorrelations noted among the value and expectations variables: students who exhibit CM and who have high subsequent expectations rate tasks to be highly valuable. This prior condition of rating tasks to be high in value can explain the noted correlation as a spurious effect.

Finally, it is significant that LOC-S affects, directly or indirectly, both expectation and both value variables in the model, but it does not affect the attribution variable. It is a bit perplexing

why LOC, as a predispositional variable, does not significantly affect the internality of attributions to a specific successful outcome. There is support in the current findings for the notion that students do have fairly stable predispositions to attribute their achievement experiences either to internal or external sources. This predisposition affects both the value that students ascribe to achievement tasks and to the expectations for success that they profess. Furthermore, value and expectations are fairly stable across time and are strongly correlated. Thus, there may exist some underlying dimension which relates to LOC-S, value, and expectation. The model reveals this dimension to be important in the prediction of CM. Unfortunately, the manner in which this dimension is mediated by attributional responses to specific achievement outcomes in the facilitation of CM has not been made clear by the current analysis.

Failing Students

Insert Table 2 here

With only 23 students reporting that they did not succeed the unit of instruction, it was deemed inappropriate to perform the full path analysis. Doing so would have yielded path coefficients which were highly unstable. The matrix of partial correlations is presented in Table 2 for the failing students. Examining the bivariate relationships in the matrix will give some idea as to the corectness of

the proposed model.

As expected, CM shows its strongest correlations with both prior and subsequent value. It also shows significant correlations with the internality of attributions and prior expectations. Failing a task when expectations were high does seem to lead to an increased willingness to pursue similar tasks outside the classroom. This willingness is also partly contingent on an internal ascription for the failure. Note that the internality variable is uncorrelated with any of the other variables in the matrix. Thus its .42 correlation with CM may be largely due to a direct effect.

As with the successful students, all of the value ans expectations variables show high intercorrelations. Several interesting findings might be noted however. Value and expectations show a .62 correlation prior to the unit and a .63 correlation sebsequent to the unit, indicating a fairly strong and stable relationship between these two variables. Also, the rating of value remains fairly constant from the beginning to the end of the unit, even with the intervening failure (r=.70). However, expectations do not remain as stable (r=.42), and the cross-lagged relationships between the two variables are also not as strong. It appears that failure may cause some erosion of expectations but not of value rating.

LOC-F shows no significant correlations in the matrix for failing students. This is especially interesting in light of the importance of LOC-S for the successful students. A global predispositional tendency to attribute failures to internal sources is not, in the present data set related to any of the other variables consedired.

Discussion of the variable relationship for failures. For failing students, CM is related to a high rating of task value, a high prior expectation, and an attribution for the cause of the failure to an internal source. Thus the failing students and the succeeding students appear to exhibit CM for much different reasons. Whereas CM, for succeeding students is related to an underlying predispositional dimension that is related to value, expectation, and Locus of Control, it is related, for failing students, more directly to the aspects of the achievement experience itself. Failing students seem willing to commit themselves to work outside of the classroom to the extent that they value success in the task that they failed, and to the extent that they feel they can make up for the failure. Clearly, they view the time spent on tasks outside the classroom as a chance for remediation.

Discussion

It has been suggested (Weiner,1979) that failure situations give rise to a search for causes more often than do successful situations, especially when failure is unexpected and also when success has high subjective importance. In the current study, both successful and failing students were asked to make attributions to explain the cause of their perceived performance. This manipulation may have resulted in a somewhat unrealistic situation, particularly for successful students. However, the current data do suggest that attributions played an important role in the facilitation of CM for failing stu-

dents but not for successful students. The path analysis for the latter group indicated that their motivated activity was related to the more stable antecedent conditions of locus of control and ratings of value and expectations. For sure, ratings of task value was the most important determinant of CM for both groups; for failures, the disconfirmation of prior expectations and the belief that the failure was caused by internal causes were also important.

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Table 1

Correlation matrix of variables included in model for success students (N=110). Effects due to Class Membership, Quiz Performance, and Sex partialled out.

	LOC-S	PR-VAL	PR-EXP	INTERN.	SUB VAL	SUB EXP	CM
LOC-S	1.00						
PR-VAL	.22**	1.00					
PR-EXP	.17*	.32**	1.00				
INTERN.	.12	.08	.07	1.00			
SUB-VAL	.24**	.37***	.25**	.19*	1.00		
SUB-EXP	.22**	.40***	.50***	.21*	.50***	1.00	
CM	.21*	.35***	.17*	.22**	.41***	.30***	1.00

* = P < .05

** = P < .01

*** = P < .001

Table 2

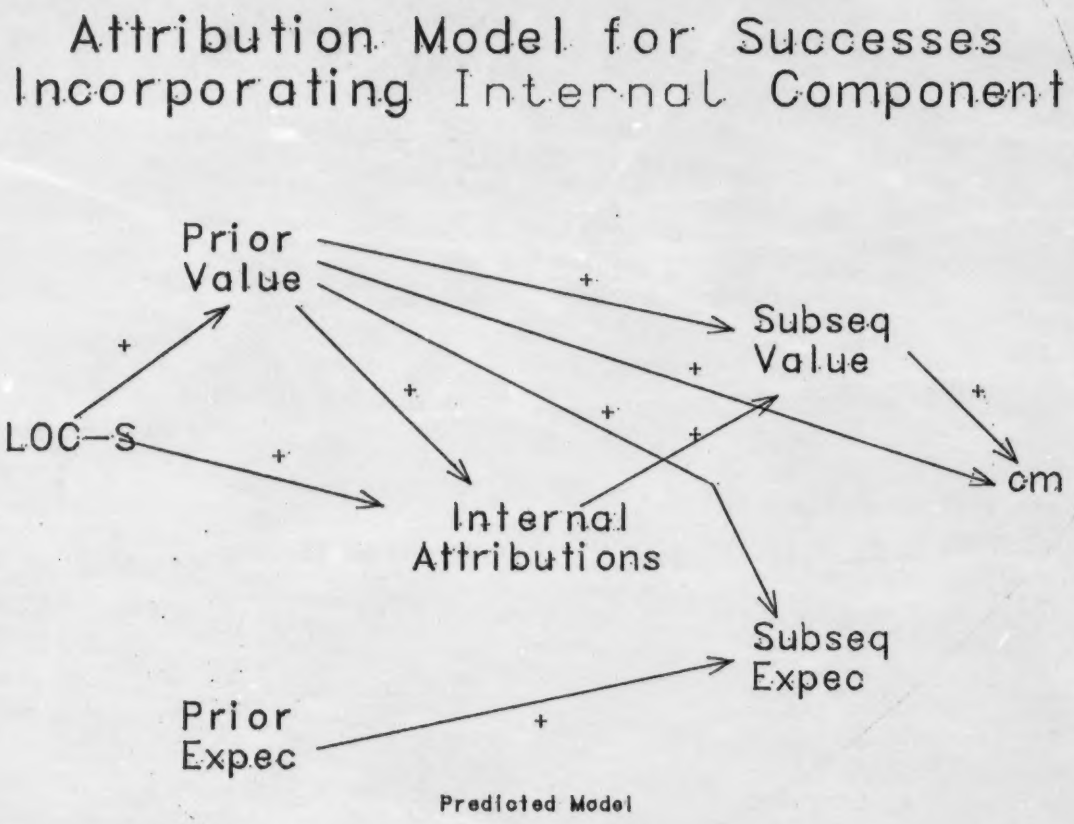
Correlation matrix of variables included in model for failure students (N=23). Effects due to Class Membership, Quiz Performance, and Sex partalled out.

	LOC-F	PR-VAL	PR-EXP	INTERN.	SUB-VAL	SUB-EXP	CM
LOC-F	1.00						
PR-VAL	-.13	1.00					
PR-EXP	.00	.62*	1.00				
INTERN.	.08	-.08	.00	1.00			
SUB-VAL	.02	.70**	.41*	.14	1.00		
SUB-EXP	.26	.46*	.42*	.10	.63*	1.00	
CM	-.12	.55**	.35*	.42*	.55**	.19	1.00

* = P < .05

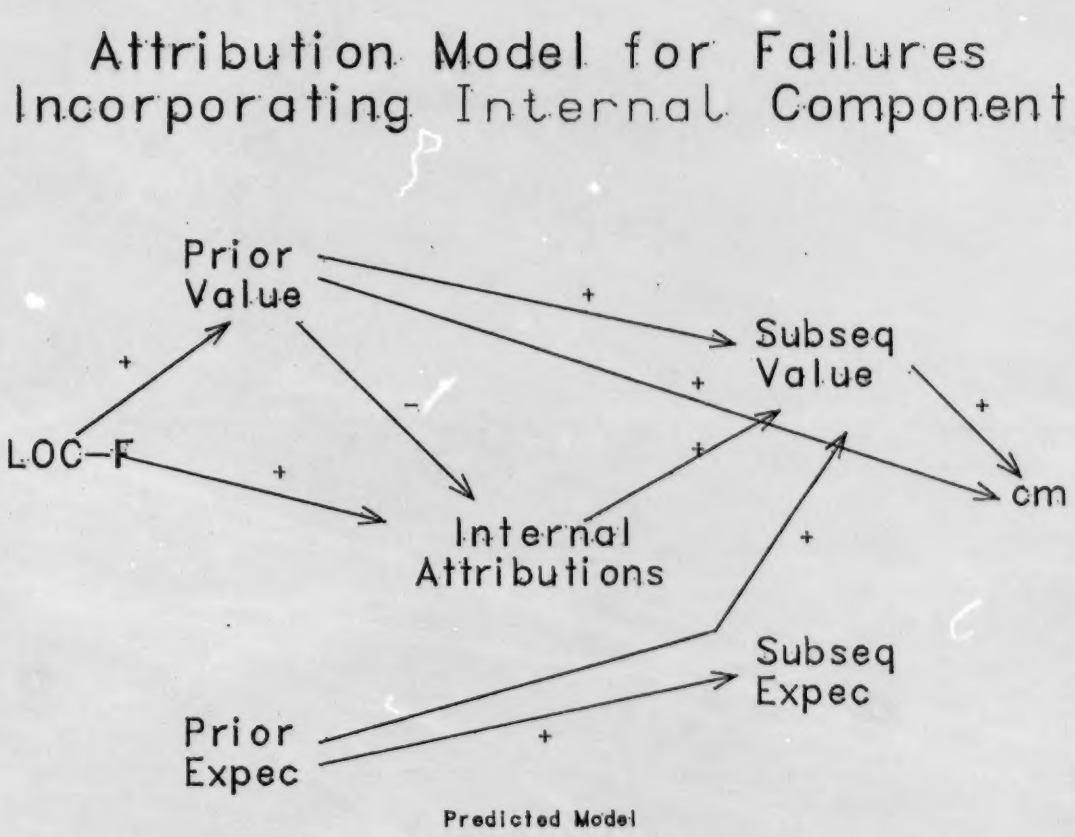
** = P < .01

Figure 1



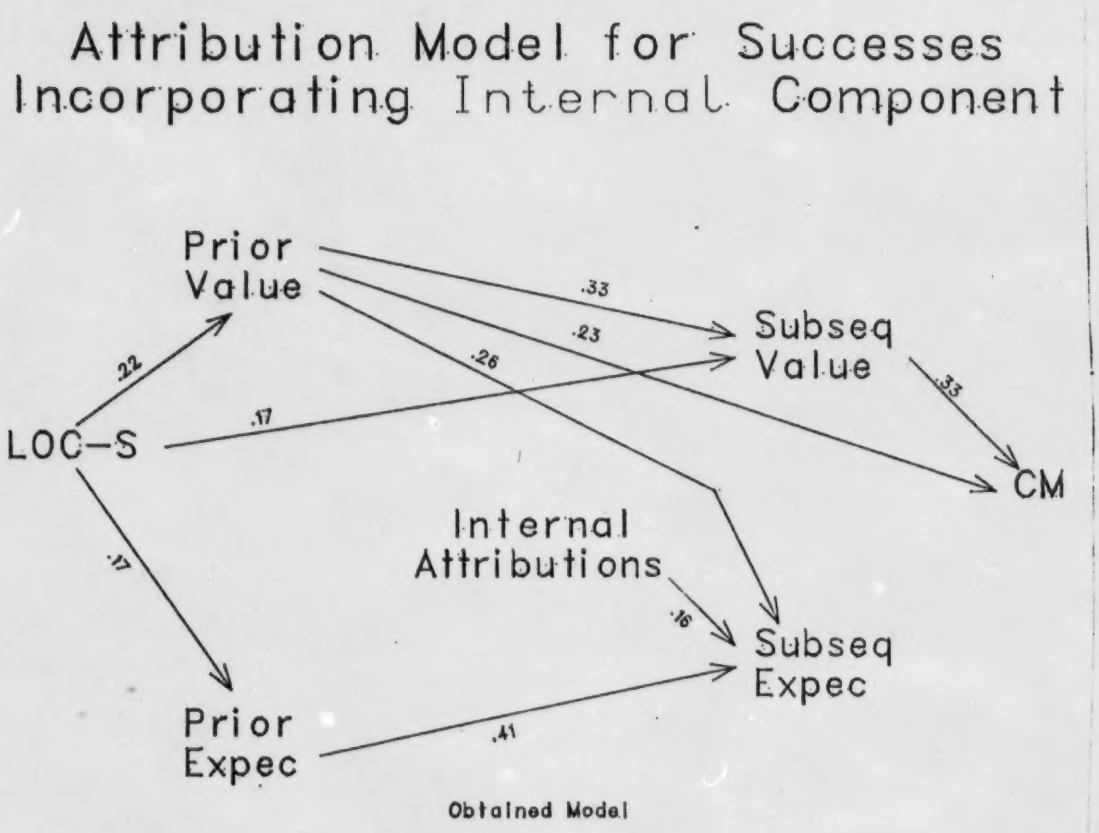
Predicted Model

Figure 2



Predicted Model

Figure 3


Attribution Model for Successes
Incorporating Internal Component
Prior
Value
.33
.23
.26
Subseq
Value
.33
CM
.22
.17
LOC—S
.17
Internal
Attributions
.16
Subseq
Expec
Prior
Expec
.41
Obtained Model
All reported weights significant beyond .05 level.